CLAIMS

1. An apparatus for converting a wideband speech signal into a narrowband speech signal, comprising:

a control element for determining whether to convert the wideband speech signal into the narrowband speech signal;

a switch coupled to the control element, wherein the control element activates the switch if the control element determines that the wideband speech signal will be converted;

a bandwidth switching filter for receiving the wideband speech signal if the switch is activated, wherein the bandwidth switching filter emphasizes a portion of the frequency spectrum of the wideband speech signal to produce an output signal with a non-flat frequency spectrum; and

a down sampler for decimating the output signal of the bandwidth switching filter.

2. The apparatus of Claim 1, wherein the portion of the frequency spectrum is the frequencies between 1000 Hz and 3400 Hz.

3. The apparatus of Claim 1, wherein the non-flat frequency spectrum has a curve with a slope between 5 dB and 10 dB.

4. The apparatus of Claim 3, wherein the curve with a slope between 5 dB and 10dB is located between 1000 Hz and 3400 Hz.

5. The apparatus of Claim 1, wherein the down sampler decimates at a rate of M = 2, wherein an output signal y(n) is related to an input signal x(n) by the relationship y(n) = x(Mn).

6. The apparatus of Claim 1, wherein the bandwidth switching filter further attenuates a high frequency portion of the wideband speech signal.

7. An apparatus for converting a wideband speech signal into a narrowband speech signal, comprising:

a control element for determining whether to convert the wideband speech signal into the narrowband speech signal;

a switch coupled to the control element, wherein the control element activates the switch if the control element determines that the wideband speech signal will be converted;

a down sampler coupled to the switch, wherein the down sampler is for decimating the wideband speech signal if the switch is activated; and

a bandwidth switching filter for receiving the decimated wideband speech signal, wherein the bandwidth switching filter emphasizes a portion of the frequency spectrum of the wideband speech signal to produce an output signal with a non-flat frequency spectrum.

8. The apparatus of Claim 7, wherein the portion of the frequency spectrum is the frequencies between 1000 Hz and 3400 Hz.

9. The apparatus of Claim 7, wherein the non-flat frequency spectrum has a curve with a slope between 5 dB and 10 dB.

10. The apparatus of Claim 9, wherein the curve with a slope between 5 dB and 10dB is located between 1000 Hz and 3400 Hz.

11. The apparatus of Claim 7, wherein the down sampler decimates at a rate of M = 2, wherein an output signal y(n) is related to an input signal x(n) by the relationship y(n) = x(Mn).

12. The apparatus of Claim 7, wherein the bandwidth switching filter further attenuates a high frequency portion of the wideband speech signal.

13. An apparatus for decoding a wideband speech signal and for converting the wideband speech signal into a narrowband speech signal, comprising:

a speech synthesis element for creating a synthesized wideband speech signal; and

a post-processing element for enhancing the synthesized wideband speech signal, wherein the post-processing element further comprises:

a post-filter element; and

a bandwidth switching filter for emphasizing a middle range of the frequency spectrum of the synthesized wideband speech signal and attenuating a high range of the frequency spectrum of the synthesized wideband speech signal.

14. The apparatus of Claim 13, wherein the middle range of the frequency spectrum is between 1000 Hz and 3400 Hz.

15. The apparatus of Claim 13, wherein the high range of the frequency spectrum is above 3400Hz.

16. A method for transmitting wideband waveforms originating in a wireless communication system, comprising:

receiving a signal carrying a wideband waveform at a base station, wherein the wideband waveform is for further transmission from the base station to a target destination;

determining whether the target destination can process the wideband waveform;

if the target destination cannot process the wideband waveform, then converting the wideband waveform into a narrowband waveform with a non-flat frequency response; and

if the target destination can process the wideband waveform, then transmitting the wideband waveform from the base station to the target destination without converting the wideband waveform into a narrowband waveform.

17. The method of Claim 16, wherein the determination of whether the target destination can process the wideband waveform comprises the step of determining whether the target destination is supported by a wideband vocoder.

18. The method of Claim 17, wherein the determination of whether the target destination is supported by a wideband vocoder comprises:

embedding a detection code within a pulse code modulation (PCM) signal, wherein the PCM signal carries the wideband waveform; and

if the target destination detects the detection code, then transmitting an acknowledgement of the detection code from the target destination via a second base station, wherein the second base station supports communication with the target destination and the wireless communication system.

19. A method for determining whether to convert a wideband signal into a narrowband signal, comprising:

receiving a final destination address originating from a remote unit,

comparing the final destination address to a plurality of destination addresses within an identification database;

if the final destination address matches one of the plurality of destination addresses within the identification database, then transmitting the wideband signal to the final destination address; and

if the final destination address does not match one of the plurality of destination addresses within the identification database, then:

converting the wideband signal into the narrowband signal, wherein the narrowband signal has a non-flat frequency response; and

transmitting the narrowband signal to the final destination address.

20. An apparatus for determining whether to convert a wideband signal into a narrowband signal, comprising:

a memory;

a processor for implementing an instruction set stored within the memory, the instruction set for performing the steps of:

receiving a final destination address originating from a remote unit,

comparing the final destination address to a plurality of destination addresses within an identification database;

if the final destination address matches one of the plurality of destination addresses within the identification database, then transmitting the wideband signal to the final destination address; and

if the final destination address does not match one of the plurality of destination addresses within the identification database, then:

converting the wideband signal into the narrowband signal, wherein the narrowband signal has a non-flat frequency response; and

transmitting the narrowband signal to the final destination address.

21. An apparatus for converting a wideband signal into a narrowband signal, comprising:

a filter for emphasizing a mid-range portion of the frequency response of the wideband signal and for attenuating a high range portion of the frequency response of the wideband signal, wherein the output of the filter is a narrowband signal with a non-flat frequency response; and

a down sampler for decimating the sampling rate of the wideband signal.

22. An apparatus for converting a wideband signal into a narrowband signal, comprising:

means for receiving a final destination address and the wideband signal originating from a remote unit,

means for comparing the final destination address to a plurality of destination addresses within an identification database;

means for determining whether to transmit the wideband signal to the final destination address or to convert the wideband signal into the narrowband signal, wherein the narrowband signal has a non-flat frequency response; and

means for transmitting the narrowband signal to the final destination address.